

Globe Latitudes and Longitudes

I. Answer the following questions briefly:

- (a) What is the true shape of the earth?
- (b) What is a globe?
- (c) What is the latitudinal value of the Tropic of Cancer?
- (d) What are the three heat zones of the Earth?
- (e) What are parallels of latitude and meridians of longitude?
- (f) Why does the Torrid Zone receive maximum amount of heat?
- (g) Why is it 5.30 p.m. in India when it is 12.00 noon in London?

Answer: (a) The true shape of the earth is a sphere flattened at the poles. Such a shape is called a geoid.

(b) A globe is an exact miniature model of the earth. It shows the earth in its actual shape, with all continents, oceans, etc marked at their proper places.

(c) The latitudinal value of the Tropic of Cancer is $23\frac{1}{2}^{\circ}$ N.

(d) The heat zones of the Earth are: the Torrid Zone, the Temperate Zones and the Frigid Zones.

(e) Parallels of latitudes. All of the imaginary circles parallel to the Equator are called parallels of latitudes. These circles have varying centres and all these central points lie on the same line: the axis of the earth.

Meridians of longitudes. All of the imaginary circles perpendicular to the Equator are called meridians of longitudes. These circles have the same centre, which is also the centre of the earth.

(f) The mid-day sun directly faces the area between the Tropics of Cancer and Capricorn. So the heat received is maximum at these latitudes. These latitudes fall under the Torrid Zone.

(g) India and the United Kingdom lie on different longitudes. Each degree of longitudes corresponds to a difference of four minutes. This is because the earth rotates 360° in 24 hours, 1° in 4 minutes. The standard meridian of India is $82^{\circ} 30'$ E, and that of London is 0° . This means a difference of 4 minutes \times 82.5 = 330 minutes = 5.5 hours. So when it is 12 noon in London, it is 5.30 p.m. in India.

2. Tick the correct answer:

(a) The value of the prime meridian is

- (i) 90° (ii) 0° (iii)

60° (b) The frigid zone lies near

- (i) the Poles (ii) the Equator (iii) the Tropic of

Cancer (c) The total number of longitudes are

- (i) 360 (ii) 180 (iii)

90 (d) The Antarctic Circle is located in

- (i) the Northern Hemisphere (ii) the Southern Hemisphere (iii) the Eastern Hemisphere

(e) Grid is a network of

- (i) parallels of latitudes and meridians of longitudes (ii) the Tropic of Cancer and the Tropic of Capricorn (iii) the North Pole and the South Pole

Answer: (a) —(ii), (b) —(i), (c) —(i), (d) —(ii),

(e) —(i).

- Remark: Actually the number of longitudes is infinite. We can draw longitudes of any degree value. We show in diagrams distinct longitudes just for our convenience, e.g. the number of longitudes can be 360 (shown at gap of 1 degree), 180 (shown at every 2 degrees), and so on—as we wish.

3. Fill in the blanks.

- (a) The Tropic of Capricorn is located at.....
- (b) The Standard Meridian of India is.....
- (c) The 0° Meridian is also known as.....
- (d) The distance between the longitudes decreases towards
- (e) The Arctic Circle is located in the.....

Answer: (a) 23 1/2° S. (b) 82 1/2° E. (c) Prime Meridian, (d) Prime Meridian, (e) Northern.

I. Multiple Choice Questions

Choose the correct option to complete the statements given below:

- (i) The globe and the earth are different in
 - (a) shape
 - (b) size
 - (c) continents and oceans
 - (d) none of these.
 - (ii) The axis is parallel to the
 - (a) equator
 - (b) Prime Meridian
 - (c) latitudes
 - (d) all of these.
 - (iii) The Tropic of Cancer is located at
 - (a) 23 1/2 ° N
 - (b) 66 1/2 ° N
 - (c) 23 1/2 ° S
 - (d) 66 1/2 ° S.
 - (iv) The heat zone with the coldest climate is the
 - (a) Torrid Zone
 - (b) Northern Temperate Zone
 - (c) The Frigid Zones
 - (d) either of the Temperate Zones.
 - (v) From the westernmost point to the easternmost point, the local times of India extend over a time difference of.....
 - (a) no difference
 - (b) 30 minutes
 - (c) 1 hour
 - (d) over 1 hour.
 - (vi) The time difference between Greenwich and India is
 - (a) no difference
 - (b) 3 hours
 - (c) 5 hours 30 minutes
 - (d) 12 hours 30 minutes.
- Answer: (i)–(b), (ii)–(b), (iii)–(a), (iv)–(c), (v)–(d), (vi)–(c).

II. Fill in the Blanks

Fill in the blanks with appropriate words given to complete each sentence:

- (i) Russia extends over time zones.
- (ii) As we move away from the equator, the size of the latitudes
- (iii) The poles fall in the.....
- (iv) To locate a point, we need to know its latitude, as well as.....
- (v) The British Royal Observatory is located in.....UK.
- (vi) A hemisphere is one of a sphere.
- (vii) Latitudes and longitudes form a.....
- (viii) All places lying on the same have the same time.
- (ix) When it is 7.30 pm on August 16 in Greenwich, it is (time) on(date) in Chennai.

Answer: (i) eleven (ii) decreases (iii) Frigid (iv) longitude (v) Greenwich (vi) half (vii) grid (viii) longitude (ix) 1 am on August 17.

True/False

State whether these sentences are true (T) or false (F).

- (i) The axis of the earth is not actually tilted as depicted in a globe.
- (ii) The equator is the 0 degree latitude.
- (iii) The Prime Meridian is the 180 degree longitude.
- (iv) More than half of India lies in the Frigid Zone.
- (v) The Tropic of Capricorn does not pass through India.
- (vi) The two Temperate Zones maintain a moderate climate.
- (vii) The time at a place in the east of Greenwich is ahead of that in Greenwich,
- (viii) The earth rotates from west to east.
- (ix) The standard longitude for Indian time is the 64° longitude.

Answer: (i) False, (ii) True, (iii) False, (iv) False, (v) True, (vi) True, (vii) True, (viii) True, (ix) False.

III. Matching Skill

Match the items in column A correctly with those given in column B.

Column A	Column B
(i) The number of time zones in the whole world	(a) 12
(ii) The number of time zones in India	(b) 1
(iii) The number of time zones in Russia	(c) 5
(iv) Difference between the local times of Greenwich and a place at 180° longitude (in hours)	(d) 4
(v) Number of minutes by which local times at longitudes at one degree difference, differ	(e) 11
(vi) Number of points having the same set of latitude and longitude	(f) 24

Ans. (i)–(f), (ii)–(b), (iii)–(e), (iv)–(a), (v)–(d), (vi)–(b).

IV. Very Short Answer Type Questions

1. What is the globe?

Answer: Globe is a true model of the earth. It shows the earth in a small form.

2. What are the advantages of the globe? [V. Imp.]

Answer: The globe is small in shape, is convenient to carry and use, and depicts all features of the earth.

3. What are the two types of lines needed to locate any point on the earth's surface? [V. Imp.] Answer: Latitudes and longitudes are required to locate any point on the earth's surface.

4. Define latitude.

Answer: One of the imaginary circles parallel to the Equator is called latitude.

5. Define longitude.

Answer: One of the imaginary circles parallel to the Prime Meridian is called longitude.

6. Which place is used as a standard for time all over the world?

Answer: Greenwich in Britain is used as a standard for time all over the world.

7. Geographically, what is the time difference between Dwarka in Gujarat and Dibrugarh in Assam? [Imp]

Answer: The time difference between Dwarka and Dibrugarh is of 1 hour 45 minutes.



A particular city lies in the time zone-2. What does this mean?

Answer: This means that the city's local time is 2 hours behind Greenwich.

8. What does the time '12 noon' signify at any place?

Answer: '12 noon' refers to the time when the sun is at the highest point in the sky.

9. Which heat zone does the equator lie in? Answer: The equator lies in the Torrid Zone.

V. Short Answer Type Questions

1. A cricket match begins at 10.30 am on January 10 in New Zealand (time zone of +12). Tell the time in Greenwich when it is shown live on TV there.

Answer: New Zealand lies in time zone +12, i.e. it is 12 hours ahead of Greenwich, or Greenwich is 12 hours behind New Zealand. So when it is 10.30 am on January 10 in New Zealand, it is 10.30 pm on January 9. So the cricket match will be telecast from 10.30 pm on Jan 9 in Greenwich.

2. Why do we have the concept of time zone? [V. Imp.]

Answer: The sun does not shine with the same intensity over all parts of the world at a particular time. If it is overhead at one place (midday), then it does not shine at all (midnight) at the place directly opposite to that place on the earth. So if we have the same time, then 12 noon will mean midday at one place, and midnight at another. To avoid such an awkward system, we have the system of time zones, so that everywhere a particular time means the same stage of the day.

3. Write a short note on Heat Zones. [Imp.]

Answer: Heat zones are the different zones of the earth, where the sun's rays fall differently, thus causing different climate patterns. These zones are called the Torrid Zone, the two Temperate Zones, and the two Frigid Zones. The Torrid Zone is very hot since the sun shines overhead here. The Temperate Zones maintain a moderate climate, and the Frigid Zones are extremely cold.

4. Which heat zone do these places lie in?

- | | |
|------------|--------------|
| (a) 20° N | (b) 36 ½ ° S |
| (c) 45° N | (d) 88° S |
| (e) 12° S. | |

Ans. (a) Torrid, (b) Temperate,
(c) Temperate, (d) Frigid,
(e) Torrid.

5. How do latitudes and longitudes help in locating a point? Why is only one of them insufficient in doing this? [V. Imp.]

Answer: Latitudes and longitudes form a grid. Two different points may lie on the same latitude, or the same longitude. But there exists only one point where a latitude and longitude intersect. So a point can be identified with the help of the latitude and longitude on which it lies.

VIII. Long Answer Type Questions

1. In the grid shown below, ten points are marked (a to j). Using the figures marked with the grid, identify the latitudes and longitudes of these points [V. Imp.]

40°	30°	20°	10°	0°	10°	20°	30°
30°				b			
20°							j
10°	e				f		
0°		a		g		d	
10°							i
20°			c				
30°							h

Answer:

Point	Latitude	Longitude
a	0°	20° W
b	30° N	0°
c	20° S	10° W
d	0°	20° E
e	10° N	30° W
f	10° N	10° E
g	0°	0°
h	40° S	40° W
i	10° S	20° E
j	20° N	30° E

